

WHAT IS CLAIMED IS:

1. A carrier-phase-based relative positioning device comprising:

a plurality of antennas mounted on a mobile vehicle or on a mobile vehicle and at a fixed location, one of said antennas being specified as a reference antenna;

means for estimating an integer ambiguity and a baseline vector from the result of observation of a single phase difference or a double phase difference based on radio waves transmitted by a plurality of positioning satellites and received by said antennas; and

means for verifying said integer ambiguity;

wherein a new integer ambiguity is estimated from the previously estimated baseline vector or integer ambiguity when the number of positioning satellites has changed or when the reference antenna has been switched.

2. The carrier-phase-based relative positioning device according to claim 1, wherein when the number of positioning satellites has increased, the new integer ambiguity is estimated only from said baseline vector estimated before the number of positioning satellites has increased.

3. The carrier-phase-based relative positioning device according to claim 1, wherein when the number of positioning

satellites has decreased, the integer ambiguity after the reduction in the number of positioning satellites is estimated by excluding an estimated value of the integer ambiguity derived from the positioning satellite which has become unobservable.

4. The carrier-phase-based relative positioning device according to claim 1, wherein the double phase difference is used for estimating the integer ambiguity and, when the reference antenna has been switched, the integer ambiguity after the switching of the reference antenna is estimated by using a difference operation method in response to the reference antenna switching.

5. The carrier-phase-based relative positioning device according to one of claims 1 to 4, wherein said means for verifying and determining the integer ambiguity determines the integer ambiguity when the reliability of the integer ambiguity has been verified a specific number of times from its successively detected estimated values.

6. The carrier-phase-based relative positioning device according to one of claims 1 to 4, wherein said means for verifying and determining the integer ambiguity determines the integer ambiguity when the same estimated value of the

integer ambiguity has been successively detected a specific number of times.

7. The carrier-phase-based relative positioning device according to one of claims 1 to 6, wherein said positioning device uses a Kalman filter for estimating a floating ambiguity and the baseline vector from which the integer ambiguity is determined.

8. The carrier-phase-based relative positioning device according to one of claims 1 to 7, wherein said means for estimating and determining the integer ambiguity based on the floating ambiguity uses lambda notation.